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World War I and Tuberculosis.—In the United States, World War I delayed the decline in tuberculosis mortality which had been going on for years previously. This mere failure of decline, however, meant that about 20,000 people more died yearly from the disease than would have died if the decline had not been arrested by the war. In most western Europen countries not only did the decline in tuberculosis mortality cease but there was an abrupt rise in deaths with each year of the duration of the war not only in belligerent nations but in neutral countries as well, that is, not only Belgium, England and France suffered from increases in tuberculosis mortality, but also the Netherlands and Denmark. Particularly severe was the sharp rise in mortality in Germany, Austria and Hungary. Thus in Austria the mortality rose from 259 in 1913 to 432 in 1917. In Russia and Poland the toll was even more appalling, for example, in the city of Lodz 1,164 per 100,000 died of the disease in 1917.—*World War I and Tuberculosis, G. J. Drolet, Am. J. Pub. Health, July, 1945, 35: 689.*—(*M. B. Lurie*)

Tuberculosis Control in Venezuela.—The population of Venezuela is 4,000,000. The greater part of the country is almost uninhabitable. Therefore, the population is concentrated along the Carribean coast to the north and the range of the Andes to the West. The average general population density is 7 inhabitants per square mile. Present knowledge of the tuberculosis problem is based on surveys undertaken since 1936. These cover 250,000 observations by tuberculin testing and chest X-raying. In urban centres mortality reaches an average of 250 per 100,000, fluctuating from 210 to 470. Tuberculosis reaches 12 to 23 per cent of the general mortality in certain cites. Caracas has shown some decline in mortality from 600 to 700 in 1900 to 241 in 1943. Morbidity in urban centres is 2.43 per cent, in rural areas 1.02 per cent, and among the Indians 0.98 per cent. Tuberculin testing reveals 20 per cent reactors in children under 4 rising to 83 per cent in those above age 14 living in urban centres. Adults in semi-rural centres are 25.9 per cent tuberculin-positive, in rural centres 27.3 per cent, and among the Indians 25.9 per cent. Venezuela's antituberculosis campaign began in 1936 with the creation of a Tuberculosis Division within the Ministry of Public Health and Social Welfare. This Division controls dispensaries and sanatoria and defines standards to be followed by private agencies. The sanatorium "Simon Bolivar" in Caracas has been organized as the National Tuberculosis Institute. Twenty-one dispensaries cover the most important cities. They carry on epidemiological studies, ambulatory collapse therapy, act as the sole agencies for referring patients to sanatoria and supervise the work of the Tuberculosis Associations. A sanitary regulation requires all workers to present a health certificate. This greatly increases case-finding activities. Shortage of nurses greatly handicaps the whole structure of the tuberculosis control movement. In Caracas 4 contacts per case have been examined during the past year. The prevalence of active disease is 7 per cent in contacts. For rural areas travel-

ing clinics with X-ray equipment proved a failure; therefore public health doctors are now being trained to head Public Health Units acting as secondary networks of tuberculosis clinics to care for the 66 per cent population in rural areas. There are 1,200 beds now available for tuberculous patients; 450 beds are being added. Tuberculosis Associations are especially engaged in seeking more beds and developing an educational program. In 1937 the Venezuelan Phthisiological Society was founded. It acts as Advisory Board of the Division of Tuberculosis.—*The Tuberculosis Problem and the Organization of the Tuberculosis Campaign in Venezuela, J. I. Baldo, Dis. of Chest, May–June, 1945, 11: 259.*—(*K. R. Boucot*)

Tuberculin and X-ray Studies in Twins.—Four hundred forty pairs of twins, of which 146 (33.1 per cent) are considered as monozygotic and 294 (66.8 per cent) as dizygotic, were studied. If the patch test of Vollmer was negative the intracutaneous test with 1 mg. of Old Tuberculin was done. X-ray studies were made at the same time. The age of the twins varied from 6 to 15 years with an average of 9.6 years. Among the 880 twins, 243 (27.6 per cent) were tuberculin-positive and 637 (72.3 per cent) tuberculin-negative. The proportion of the twins with allergy was exactly the same between the identical and nonidentical twins. In 61 (13.8 per cent) pairs both twins had a positive reaction, in 258 (58.6 per cent) both had a negative reaction. In 121 (27.5 per cent) pairs one twin was positive and the other twin negative. This allows the conclusion that in a majority the infection was not contracted simultaneously. Of the twins 81.3 per cent went to the same school and 18.6 per cent to different schools. There was no difference in tuberculin tests if the twins did not go to the same school. The index of 27.5 per cent of positive results in the twins proves to be inferior to the results obtained in other groups of school children in Argentina, which were between 29.5 per cent and 41.1 per cent in different groups of children with an average age from 8.5 to 9.2 years. The genotypic factor does not exert any influence on the acquisition of tuberculous infection. Twenty and four-tenths per cent of the twins between 6 and 7 years had a positive reaction. The percentage of positive reactions was found highest in the group between 12 and 15 years where it was 49.3 per cent. X-ray study showed the existence of pulmonary lesions in 33 twins which were part of 22 pairs, 10 monozygotic and 12 dizygotic. In 11 pairs (4 identical and 7 nonidentical) both twins had X-ray evidence of pulmonary involvement. In the 11 other pairs, 6 identical and 5 nonidentical, only one of the twins was affected. Neither increase in the hilar markings nor increase of the bronchovascular markings was considered as pathological. Thirty-two cases showed some evidence of pulmonary lesions of tuberculous origin, one had hydatid cyst of the lung. Of those 33, 23 (69.6 per cent) had also a positive skin reaction. The remaining 10 cases (30.3 per cent) had a negative skin reaction. Of the 22 pairs in which both twins had X-ray evidence of tuberculosis, all lived in the same medium but 10 went to different schools.—*Examen radiologico-tuberculinico de 440 paresade gemelos en edad escolar, R. F. Vaccarezza, J. Dutrey & E. M. Olivieri, Prensa méd. argent., August 24, 1945, 32: 1639.*—(*W. Swienty*)

Tuberculin Reaction and Environment.—It has been possible for several years to complete tuberculin testing of school children in several Norwegian cities. Tuberculosis in school children is generally characterized by primary infections and runs a benign course; therefore, an examination so limited is of little significance in combating infection. However, when the work was extended to include environment investigations centering about the tuberculin reactors, it then became valuable and the prospects of discovering sources of infection increased. This author carried out such an investigation in Bergen, Norway; 12,000 school children were examined. All reactors were subjected to photofluoroscopy and all the Pirquet negative scholars were advised to undergo BCG vaccination. Of those

tested in all grades, 1,236 were found to be Pirquet positive and 1,155 of this group were screen-photographed. Three cases of active pulmonary tuberculosis were found, 11 cases of hilar adenitis and one case of pleuritis. Environmental investigation disclosed that more than one-half of those found to be positive were already known to the Public Health Service, but 6 new cases of infectious tuberculosis were discovered. The author has recommended the environmental investigations of tuberculin-reacting school children as an important aid in the campaign against tuberculosis.—*Tuberculin and Environment Investigation of School Children, E. Berle, Acta. med. Scandinav., October 19, 1943, 115: 219.*—(*E. R. Loftus*)

Tuberculin Reaction.—A number of patients with Ghon tubercles and calcified hilar nodes had negative tuberculin reactions. Since positive reactions are believed to indicate sensitivity produced by living tubercle bacilli in the tissues, it would seem that, if the tuberculin reaction became negative during repeated tests, this would indicate that living bacteria no longer existed in the tissues or were so completely walled off that there was no antigen available to induce the formation of antibodies. Also, since an increasing number of individuals receive only minimal infection with tubercle bacilli and are completely desensitized when the tubercle bacilli die off, such infections may be missed in the usual tuberculin testing of a community. One hundred and twelve children with Ghon complexes were studied at the Mayo Clinic. The age range was from 3 to 15 years. The largest group consisted of 12 and 13 year olds. There were 56.3 per cent males. Under age 12 there were more reactors than nonreactors. Between ages 12 and 15, there were more nonreactors than reactors. Of 20 with a history of exposure to tuberculosis, 15, or 75 per cent, reacted to the first strength of PPD. In 7 patients with tuberculous lesions in addition to their Ghon lesions, all were positive to the first strength. The geographical distribution corresponded to that of all Mayo Clinic patients. Therefore, patients with calcified lesions were not restricted to a particular area. Fifty-seven, or 50.9 per cent, of the 112 children were positive to the first strength of PPD. Such deviation from the anticipated 100 per cent cannot be accounted for on the basis of random sampling. Twenty-three of the 55 nonreactors to the first dilution were given a second test (0.005 mg. PPD per 0.1 cc.). Eleven, or 47.8 per cent, were positive to this second dilution. Bernard *et al.*, in studying 184 patients ranging in age from 12 to 15 years who had positive X-ray evidence of tuberculosis, found only 7 1 per cent failed to react to 1 mg. of OT. Wells and Smith found 55 per cent of 128 negative. Gass *et al.* found little association between the tuberculin reaction and calcified lesions in 573 cases. Lloyd and MacPherson found that of 203 healthy normal children with positive tuberculin reactions, 2 per cent changed to negative after a two-year interval. Aronson and Dannenberg, after a five-year interval, found that 9 per cent of 86 patients shifted to negative from positive. Therefore, loss of sensitivity is not infrequent, but is no indication of waning immunity according to Willis and Sewall *et al.* A negative reaction to tuberculin in humans is no evidence that the individual never was infected nor that acquired resistance is lacking as stated by Rich. With an increase in minimal tuberculous infection and complete healing of primary tuberculosis, an individual may fail to react to tuberculin. This seems possible in view of the findings of Feldman and Helmholz that Ghon tubercles from a child 20 months old were negative for tubercle bacilli when a suspension of the tubercles was injected into guinea pigs. Whether such persons may again respond to tuberculous infection with a primary complex as apparently occurred in some of the cases presented by Terplan must be determined by the study of a larger series.—*Tuberculin Reaction in Children with a Ghon Complex: Review of 112 Cases, Mildred A. Norval, Am. J. Dis. Child., July, 1945, 70: 1.*—(*K. R. Boucot*)

Pulmonary Zones.—This study is based on examination of 188 humans and 90 other mam-

mals. The classic concept of pulmonary asymmetry with three right and two left lobes is inexact. In 50 per cent only two lobes were found on the right, and in 15 per cent there were three lobes on the left. Moreover, fissures were found only in pathological states or other special circumstances. The theory that the right upper lobe is superadded is incorrect, for embryological study shows that the right upper and middle lobes are homologues of the left upper and middle zones. These latter zones are found joined together in 85 per cent of the cases, with only a thin interzonal partition. Nine zones are found in each lung, each autonomous from the standpoint of bronchovascular, lymphatic and nerve supply. The zones are separated by two thin interzonal elastic membranes, homologues of the fissures, or by a fissure and a membrane. The right upper, middle, and lower lobes have three, two, and four zones, respectively, while the left upper and lower lobes have four and five. The existence of these zones, pyramidal in shape, with apex towards the hilum, is confirmed by dissection, injection of radio-opaque material in pathological specimens, and clinical and radiologic studies in tuberculosis, pneumonia, carcinoma of the lung and lung abscess.—*Zones pulmonaires et zonites: Anatomo-radiologie des zonites partielles ventrales moyennes droites, P. Coulouma, Schweiz. med. Wchnschr., August 19, 1944, 74: 886.*—(*J. Gerstein*)

Soil and Primary Infection.—A report is given of 4 simultaneous cases of erythema nodosum in a family with 6 children, whose mother was an undiagnosed open case of pulmonary tuberculosis. All children were in poor general condition due to bad economic circumstances. Five of them showed evidence of active primary infection with unusually pronounced pulmonary and glandular involvement. Only one child remained free from tuberculosis and had a negative skin test. These observations are interpreted as a proof of the importance of the soil in tuberculosis. The similarity in the above cases in the form and development of the primary infection with a particular tendency to skin manifestations, such as erythema nodosum, is attributed to a special familial sensitivity towards the tubercle bacillus.—*Terrain et primo-infection (a propos de quatre cas d'érythème noueux familial simultanés, J. Genévrier & Fr. Bordet, Rev. de la tuberc., January–February, 1941, 6: 34.*—(*V. Leites*)

Exogenous Reinfection in Tuberculosis.—The theory of endogenous reinfection and the supporting arguments are submitted to a critical reevaluation. The question is brought up why single or repeated exogenous reinfections could not produce the same effect as bacilli derived from the primary complex and whether it is admissible to attribute more aggressive properties to the tubercle bacilli originating from an endogenous source. The theory that primary infection confers a specific life-long resistance against exogenous reinfection is not well founded. A relative resistance against exogenous reinfection has been experimentally demonstrated only against a certain quantity of bacilli and only in certain animals which had been recently and massively infected. This does not necessarily apply to human primary infection. Reference is made to the studies carried out in collaboration with Saenz and Canetti demonstrating sterilization of primary foci and even disappearance of tuberculin sensitivity after primary infection. The clinical argument in favor of endogenous reinfection, implying that exposed adults do not present a higher morbidity than nonexposed ones, is considered erroneous, as proved by statistical data (Rist, Simon, Opie, McPhedran). The argument of the practical non-existence of marital tuberculosis is without foundation, since it has been found in 25 to 30 per cent of cases. However, marital tuberculosis rarely occurs simultaneously, which explains the fact that its frequency was not noticed by some observers. For all these reasons exogenous tuberculosis is considered not only possible but even rather frequent. The possibility of endogenous origin of tuberculosis cannot be denied, but it represents a pathogenic mechanism which is neither ex-

clusive nor very frequent.—*Reinfections exogènes dans la tuberculose, P. Ameuille, Rev. de la tuberc., 1939–40, 5: 1370.*—(*V. Leites*)

Reinfection Lesions.—In 100 autopsies of subjects who had died of nontuberculous diseases around the age of 45, 64 were found to have latent tuberculous reinfection lesions. The endogenous or exogenous origin of these lesions is discussed. There is no macroscopic nor microscopic criterium which would permit to decide this question, but one can investigate whether at the time of reinfection the primary complex still contained living tubercle bacilli which would make an endogenous reinfection possible. The virulence of the primary complex is neither indefinite nor extremely long lasting as formerly believed. Inoculations of primary complexes revealed that these lesions are sterile in 50 per cent at the stage of caseation and in 80 per cent at the stage of calcification and fibrosis. According to these findings, primary complexes would contain virulent bacilli only in about 20 per cent a few years after primary infection, that is, during childhood, adolescence and early adulthood. The opinion is expressed that most reinfection lesions occur at a later age. Some develop in childhood consecutively to postprimary dissemination, resulting in Simon foci, but they are considered very rare. On the other hand, statistics are quoted indicating an increase in reinfection lesions between the ages of 30 and 60. These two facts, early sterilization of the primary complex and relatively late occurrence of reinfection lesions, indicate that the majority of reinfections must be of exogenous origin. From a pathological viewpoint, the main difference between primary and latent reinfection lesions is the absence of lymph node participation in the latter, the pathological aspects of the lesions themselves being rather similar. The possible causes for this change in lymph node reaction are: (*1*) difference in the age at which primary and reinfection lesions occur, the participation of lymphatic tissue being always more important in childhood; (*2*) the nonspecific alterations produced in the course of time by nontuberculous causes in the lymph nodes (anthracosis, silicosis); (*3*) a state of allergy produced under the influence of a preceding primary infection. —*Le diagnostic anatomique des lésions de réinfection latente, G. Canetti, Rev. de la tuberc., 1939–40, 5: 1391.*—(*V. Leites*)

Bacteriology of Tuberculous Cavities.—Thirty-three postmortem examinations were made on the bacteriologic flora associated with tuberculous pulmonary cavitation. Staphylococci, streptococci, pneumococci and micrococcus catarrhalis were found in the exudate of cavities and their draining bronchi in the frequency named. Within the walls of the cavities only tubercle bacilli were demonstrable. In no instance were other organisms found within the walls in intimate association with tubercle bacilli. The authors conclude that tuberculous pulmonary tissue is refractory to pyogenic infection.—*La flora microbiana de las cavernas tuberculosas pulmonares, A. A. Raimondi, R. Scartascini & F. M. Gonzalez, Arch. argent. de tisiol., October–December, 1944, 20: 367.*—(*R. Kegel*)

Prognosis in Tuberculosis.—Study of the sedimentation rate and of the sputum for tubercle bacilli was found to be helpful in predicting the prognosis of patients with tuberculosis. The material comprises 2,500 cases, and the observation period was from five to fifteen years. The sedimentation rate at the beginning of the period of observation, or when the patient's sputum was first found to be positive, is a very valuable prognostic sign. At the end of ten years, 33 per cent of patients with normal sedimentation rates were dead, whereas 75 per cent of patients with high sedimentation rates had died of tuberculosis. Of even greater importance was the value of the sedimentation rate at the end of the first period of sanatorium treatment, which was at least three months in each case. It was found that at the end of ten years 25 per cent of those discharged with normal sedimentation rates were dead, whereas 80 per cent of those discharged with elevated sedimentation rates had died. The importance of the bacteriological

findings in the sputum is appreciated when it is noted that among those discharged with a negative sputum 30 per cent were dead within ten years, whereas 73 per cent of those with positive sputum were dead at the end of the same period of time. Although a favorable prognosis can be given to a patient who is discharged with a negative sputum and a normal sedimentation rate, it is to be noted that the death rate among this favorable group is still three to four times higher than that of the corresponding normal death rate. It is also noteworthy that this favorable group comprises only about 10 per cent of those discharged alive.—*The Influence of the Sedimentation Rate and the Bacteriological Finding during the First Period of Care on the Prognosis in Cases of Open Pulmonary Tuberculosis, G. Berg, Acta med. Scandinav., June 23, 1942, 110: 558.*—(*H. Marcus*)

Incipient Pulmonary Tuberculosis.—The authors have studied 300,000 X-ray plates and have found among them 68 cases of incipient tuberculosis. The interval between normal and first pathological findings as evidenced by X-ray examination was generally one year, in some instances longer, but always less than two years. Among the 68 detected cases of incipient tuberculosis, 42 had an interval between a normal and a pathologic X-ray film of less than one year, and 26 of one to less than two years. The cases are divided into primary and postprimary infections. The authors prefer the expression "postprimary" to "reinfection." There were 9 primary infections of which 6 showed parenchymal, 2 pleural localization. One case had a possibly true primary bronchial lesion. The primary infection was exclusively in subjects 14 to 21 years of age. Only 2 were 23 and 24 years of age, respectively. The detection of the disease was so early that no spread had occurred. There was swelling of the mediastinal lymph nodes in all cases, but the reaction of the nodes was less than in children. All were found by routine X-ray examination but for one case who had an erythema nodosum. The tuberculin reaction did not give any indication as to the severity and development of the pulmonary lesions. In 2 cases tubercle bacilli were found. Fifty-nine cases of postprimary infection were found. Fifty-eight cases had incipient pulmonary lesions. One case was an incipient bronchial tuberculosis, which is thought to be postprimary. This shows the enormous preponderance of the localization of the reinfection in the pulmonary parenchyma. As to the localization, 60 cases (91 per cent) were unilateral. The right lung was infected in 36 cases and the left in 24 cases. Six (9 per cent) showed bilateral localization, but 5 of the latter had an X-ray film taken at an interval longer than one year, so it is possible that they had really begun as unilateral cases but escaped detection. Thirteen per cent of the unilateral cases showed cavitation. The type of disease was infiltrative in 44 (68.75 per cent), nodular in 12 (18.75 per cent), infiltrative-nodular in 8 cases (12.50 per cent). Tracheobronchial lesions without X-ray evidence but with positive bronchoscopic findings were present in 2 cases. Most of the infiltrates were localized in the lateral subclavicular region; so were most of the nodules. The infiltrative-nodular type was localized with equal frequency in the apex, in the lateral and medial subclavicular regions. The postprimary tuberculosis or reinfection was diagnosed only if tuberculin allergy existed in subjects who were negative from a clinical and X-ray standpoint. Almost all had been contact cases. There was X-ray evidence of calcification or other signs of healed primary infection with complete absence of adenopathy. The postprimary infection is either localized in previously normal lung tissue or is a reactivation of a previous childhood infection. Ten per cent were reactivations of previously existing foci. The bilateral cases are generally localized in the apices and correspond to reactivation of previously existing foci. An important portion of the unilateral cases are evidently due to coalescence of several preëxisting foci at the site of a perifocal exudate. There was no case of hematogenous or of bronchial spread. The sputum contained tubercle bacilli in 76.66 per cent of 30 cases in which bacteri-

ological studies were made. Hemoptysis was one of the early symptoms and was present in 7 cases. The most common age was between 21 and 30 years (29 cases); 23 cases were between 15 and 20 years. The infiltrate was most frequent in the age group between 21 and 30 years. There was no difference in sex distribution. An important portion of the early infiltrates seem to be of exogenous origin by contact and favored by a depression of specific and nonspecific defense reactions of the organism. Eight cases showed the first symptoms of tuberculosis during or after pregnancy; of these, 2 during the first three months, 2 in the eighth month of pregnancy and 4 during the first two months of the puerperium. Not included in these findings are numerous cases of purely pleural beginning of tuberculosis in pregnant women. In only 7 cases could an exogenous superinfection be proved; all were in hospital personnel; 2 were physicians and 5 were nurses. All of them had a high allergic reaction previous to the beginning of their pulmonary disease. Six showed infiltrates, one an early cavitation and the remaining case was of the infiltrative-nodular type. The localization was in the right lung in 6 cases.—*Formas de iniciacion de la tuberculosis pulmonar del adulto, A. C. Artagaveytia, L. E. Matos, C. S. Laso & A. Crisci, Rev. de tuberc. d. Uruguay, March 12, 1944, 12: 287.*—(*W. Swienty*)

Incipient Pulmonary Tuberculosis.—This is a study on 35 cases of initial lesions observed at a tuberculosis clinic for pre- and postnatal and student prophylaxis. The interval between normal X-ray findings and the appearance of the lesions was less than three months in 9 cases, less than six months in 14, less than nine months in 21, less than twelve months in 25, less than fifteen months in 30, and less than eighteen months in 35 cases. In 4 cases the appearance of the lesions coincided with the turning positive of the tuberculin reaction: in these cases the possibility of a primary tuberculosis can be admitted. Eighty-eight and four-tenths per cent of the cases showed positive tuberculin reactions previous to the appearance of the lesions. Most of these patients were asymptomatic until the X-ray diagnosis was made, except cases with pleural involvement and with acute caseous disease. The symptoms, when present, were: hemoptysis, grippal syndromes, persistent upper respiratory infections, erythema nodosum and in one case a typhoid status. Pulmonary infiltrates with or without cavitation constituted 48.6 per cent of the cases. The remainder of the cases were: corticopleuritis with effusion, tracheobronchial lymphadenopathy, caseous bronchopneumonia, nodular hematogenous tuberculosis and bronchial tuberculosis. It was noteworthy that tuberculous pleurisy and corticopleuritis was twice as frequent in pregnant women as in the other patients. In 29.40 per cent of the cases there was cavitation present at the moment of X-ray diagnosis. Only 28 per cent of the cases showed roentgenological changes previous to the appearance of the active lesions.—*Formas de iniciación de la tuberculosis pulmonar en el adulto, F. D. Gomez & C. Epifanio, Hoja tisiol., June, 1945, 5: 2.*—(*L. Molnar*)

Interstitial Tuberculosis.—A special form of pulmonary tuberculosis is described, which is thought to be clearly distinct from common bronchogenic phthisis as well as from disseminated tuberculosis. The radiological characteristics are: (*1*) trabecular and reticular changes forming a network which is wider near the hilum and denser at the periphery, suggesting lobular contours; (*2*) micronodular infiltrations, miliary or submiliary in size. These two elements are combined in various ways resulting in different radiological aspects. The lesions are mostly bilateral, although predominantly unilateral cases may occur. Another characteristic feature is the mainly cortical localization of the infiltrations. Two categories of cases are recognized: (*1*) the pure reticulo-nodular forms; (*2*) reticulo-nodular forms accompanied in the course of their development by infiltrations and cavity formations of various extent. The lack of important clinical symptoms in association with the extensive X-ray findings is characteristic.

The patients are in good general condition and are mostly afebrile. Another diagnostic feature of these forms is the frequent association with pleural and laryngeal involvement, the former being present in two-thirds of cases. Laryngeal complications were found in approximately 30 per cent of cases (as compared to 10 per cent in bronchogenic tuberculosis). The laryngeal lesions were nodular or ulcerative in character. The majority of these patients had very slight expectoration. Some had negative sputum or sputum containing a relatively small number of bacilli. These facts made a direct propagation of bacilli from the lung to the larynx unlikely. The propagation is thought to be lymphogenous (in the submucous lymph system). The development of these forms of pulmonary tuberculosis is extremely variable, ranging from complete radiological clearing to extensive fibrosis. The third possibility is the formation of new infiltrations which can go on to absorption or excavation. The formation of new lesions is clinically almost always silent in these forms of tuberculosis. The anatomical basis of the described syndrome is thought to be an involvement of the interstitial tissue of the lymphatics and perilobular spaces combined with miliary tubercles, located as well in the interstitium as in the alveoles. The progression is felt to be lymphogenous (within the lung itself and to distant organs).—*Syndrome radio-clinique commun a certaines formes de tuberculose pulmonaire d'allure interstitielle prédominante, F. Tobé, M. Degeorges & J. Chenebault, Rev. de la tuberc., July–October, 1941, 6: 377.*—(*V. Leites*)

Oto-cardiac and Oculo-cardiac Reflexes in Pulmonary Tuberculosis.—On female patients suffering from pulmonary tuberculosis it is of great importance to study the autonomic nervous system, whichever be the parasympathetic imbalance present. This study is of value only when done together with X-ray studies and other tests since alone they are of little help in the evaluation of the progress of the disease. Several tests exist for the examination of the autonomic nervous system. The oto-cardiac and oculo-cardiac reflexes were studied; 64 female patients were examined. The following conclusions are drawn: (*a*) The oculo-cardiac reflex is a better index for the evaluation of the progress of the disease than the oto-cardiac reflex. (*b*) Often both reflexes are not in accordance with other tests, usually performed, as far as the prognosis of the disease is concerned. (*c*) In 97 per cent of the cases studied both reflexes were reversed. (*d*) These reflexes should be looked for routinely in order to formulate a more accurate prognosis. (*e*) The instability of the reflexes is related to the instability of the autonomic nervous system and to tuberculosis. The authors refer to Balaize who studied 100 patients and drew the following conclusions: (*1*) The number of increased reflexes is less than normal in tuberculous patients, while the number of reversals is higher. (*2*) Prognosis is good on patients with an exaggerated oculo-cardiac reflex (somewhat vagotonic). (*3*) Prognosis is bad on patients with a sympathicotonic reflex. (*4*) The evolution of the reflex parallels the favorable prognosis of the disease. (*5*) Reversal of the reflex or a noticeable decrease in the pulse rate follows aggravation of the disease.—*Reflejo oculo-cardiaco y oto-cardiaco in la tuberculois pulmonar, A. P. Heudtlass, J. A. Marti & A. Adamo, Bol. d. Hosp. F. Santojanni, 1945, 1: 175.*—(*P. B. Franca*)

Treatment of Hemoptysis.—Ten cc. of novocaine, 1 per cent, were injected into the stellate ganglion according to White's technique in 3 cases of severe pulmonary hemorrhage. If the site of injection is correctly chosen, a Claude-Bernard-Horner's syndrome becomes manifest and persists for about thirty minutes. In each of the 3 patients thus treated the hemorrhage stopped and the injections were repeated at four-day intervals to prevent recurrence or to stop hemorrhages if they recurred.—*Trois cas d'hémoptysie traité aves succes par infiltrations anesthétique du ganglion sympatique cervical stellaire, F. A. Toury & J. Vicaire, Rev. de la tuberc., 1941, No. 9/10, 6: 571.*—(*G. Simmons*)

Early Diagnosis of Tuberculosis.—From 1924 through 1939 there was a steady decline in the annual number of cases of respiratory tuberculosis in up-state New York. Beginning in 1940 in males there was a striking increase in cases reported. A less marked increase occurred in females in 1942. The increase in reported cases in males was largely due to an increase in minimal cases in the age group 20 to 34. In females, the increase was largely due to an increase in minimal cases in the age group over 35. It is believed that the increase in reported cases was not due to a greater development of tuberculosis during this period but to the discovery of more cases by the mass chest X-ray examinations practiced by the army and industrial institutions during this time. An upward trend in the proportion of minimal cases reported began before the increase in the total number of cases reported, suggesting an improvement in the early diagnosis of the disease which was independent of the mass X-ray surveys. Respiratory tuberculosis is now primarily a disease of adults in both sexes during the period of greatest social and economic significance.—*Recent Trends in the Early Diagnosis of Tuberculosis, E. X. Mikol & R. E. Plunkett, Am. J. Pub. Health, December, 1945, 35: 1260.*—(*M. B. Lurie*)

Roentgenology of Regional Anatomy of Lung.—This is a long, well illustrated article not fit for abstracting. It should be read in the original since without illustrations it is difficult to follow. The following summary is offered: (*1*) The X-ray topography of the postero-anterior region of the antero-superior lobules is studied. This is called supra-hilum posterior region. (*2*) The supra-hilum posterior region rests on a practically immovable surface and its slight movements are indirectly caused by the diaphragm and the ribs when these act upon the whole bronchial tree, pushing the main bronchus downward, outward and forward. (*3*) In the supra-hilum posterior region the greatest percentage of tertiary cavities are localized. (*4*) It is in the supra-hilum posterior region where most of the residual hematogenous lesions of primary infection are localized. (*5*) The radiological study of this region is of interest especially in cases of subclavicular, supracisural, hilar-apical and hilar-clavicular infiltrations.—*Topografia radiografica de regiones especiales del pulmon, S. P. Heudtlass & J. Marti, Bol. d. Hosp. F. Santojanni, 1945, 1: 39.*—(*P. B. Franca*)

Fluoroscopy of Diaphragm.—Determination of pleural lesions is of the utmost importance in predicting the success of pneumothorax in pulmonary tuberculosis. After observing 600 patients over a period of four weeks it was found that ordinary anterior-posterior fluoroscopy was not sufficient for examination of the costophrenic sinus. In 171 of the 600, pleural changes were evident. In 55.8 per cent changes were present in the anterior part of the sinus, in 7.6 per cent in the anterior and posterior, in 15.6 per cent in both, and in 21.0 per cent throughout. Only in the latter group could antero-posterior views show abnormalities. This emphasizes the need for turning patients in all directions in examining the costophrenic sinus.—*Beitrag zur Durchleuchtungstechnik des Zwerchfells, H. C. Iselin, Schweiz. med. Wchnschr., July 28, 1945, 75: 659.*—(*J. Gerstein*)

Azygos Vein.—Roentgenographically the azygos vein can be demonstrated in about 25 per cent of all antero-posterior views as a small knob-like shadow in the right tracheobronchial angle. It may be confused with a lymph node in this position. Slight turning of the patient may bring the shadow into view in a greater number of cases. The part of the vein that is visible is the horizontal curve as the vein bends over the lung root to join the superior vena cava. When an azygos "lobe" is present the vein swings out laterally and in its course over the lung it squeezes off a portion. This is not a true accessory lobe because it is only incompletely separated from the right upper lobe and has no true bronchus or blood supply of its own. Since the vein is extrapleural, the azygos pseudolobe is sepa-

rated from the right upper lobe by both the parietal and the visceral pleura, four layers in all. This explains why the azygos "lobe" frequently fails to collapse when right pneumothorax is induced. In such cases it is easily seen suspended, as it were, from the dome of the pleura, and it has been mistaken for broad adhesions.—*Die Vena Azygos im Roentgenbilde, H. Schenk, Schweiz. med. Wchnschr., June 9, 1945, 75: 522.*—(*H. Marcus*)

Photofluorography and Fluoroscopy.—The problem discussed is the examination of as large a segment of the population as possible in order to eradicate tuberculosis. The method suggested is costly and involves much work, but is quicker than any other. Fluoroscopy and photofluorography are to be used together, with the former done first. Films may then be taken in special positions. The disadvantages of the photofluorograph when used alone, including hiding of large areas of the lungs by heart and diaphragm, confusion of muscle and breast shadows, and difficulty in examining apices, are eliminated by fluoroscopy. The following administrative and nontechnical problems are then discussed; education of the population in the problem of tuberculosis; education and choosing of physicians for the job; examination of units like schools and factories first; preparation of equipment needed for the job; examination of contacts at frequent intervals; social help for the tuberculous.—*Die Reihendurchleuchtung und das Schirmbildverfahren, M. Hopf, Schweiz. med Wchnschr., December 30, 1944, 74: 1356.*—(*J. Gerstein*)

Photofluorography.—The principle of the photofluorograph was first described by Bleyer in 1896, but was not developed further until 1921, when Schinz described the process and improved upon it. The present study began in 1939 when X-ray films were taken on 5,762 students, workers and army personnel. The advantages of speed and cheapness made screening of large numbers easy. Technical improvements were so great that there were only 33 failures for such reasons. The 24 by 24 mm. film was found to be the best, but the 68 by 68 mm. film was better for detail in miliary tuberculosis and silicosis. One of the special problems is ability to read the film, as shown by large variation in positive findings with different examiners. A special key for the description of positive findings is given. Using this, the investigators found that 84 per cent were normal, 6 per cent had insignificant and 10 per cent had significant pathological changes. Less than one per cent of the total had tuberculosis.—*Zweck, Organisation, Durchführung und vorläufige Ergebnisse der Schirmbilduntersuchung, H. R. Schinz, Schweiz. med. Wchnschr., August 19, 1944, 74: 879.*—(*J. Gerstein*)

Morgan Timer.—Examination of large population groups by photofluorography poses special problems because of the rapidity at which the procedure is conducted, the difficulty of obtaining retakes, and the need for uniformity in technique in order that interpretations be accurate. A photo-electric timing mechanism has been developed to control automatically the photofluorographic exposure. This eliminates the need for measuring individuals or adjusting the roentgenological equipment. The phototimer consists primarily of a multiplier phototube and a condenser-thyratron-relay system. Since the response of the phototube is directly proportional to the illumination of the fluorescent screen, exposure times will be long when the brightness of the screen is low in thick-chested individuals, and short when the fluorescent screen is bright in thin-chested individuals. A daily adjustment of kilovoltage and milliamperage settings to convenient positions is made. Thereafter, after placing the subject before the photofluorographic hood, all that is necessary is to close the exposure switch. Because different interpreters prefer different levels of radiographic density, the phototimer is equipped with a sensitivity control so that density may be regulated.—*Automatic Exposure Control in Photofluorography, R. H. Morgan, Dis. of Chest, March—April, 1945, 11: 150.*—(*K. R. Boucot*)

Fatal Intrapleural Injection of Lipiodol.—Following the intrapleural injection of lipiodol in a patient with a chronic bronchopleural fistula, the patient started coughing violently; there was malaise, later on dyspnea and cyanosis. The patient died five days later. It is assumed that the cough caused the lipiodol to be dispersed in fine drops throughout the lungs causing reflex constriction of alveoli and changes in the capillary permeability which led to acute pulmonary edema and fatal asphyxia.—*A propos des injections intrapleurales en cas de fistule bronchopleurale. Une complication mortelle, J. Rolland, Rev. de la tuberc., 1943, No. 4/6, 8: 91.—(G. Simmons)*

Thorium Oxide for Demonstration of Cavities.—A 25 per cent colloidal solution of thorium oxide is very fluid and flocculates when it comes in contact with tissues. It was used for the visualization of tuberculous cavities and results obtained were better than those given by lipiodol. Ten to 40 cc. were injected transthoracically and no untoward effects were encountered. The outline of the cavity is well visualized; multiloculated cavities and intercavitary septa can be recognized as such and the draining bronchus can be seen. No general reactions occurred. Thorium oxide was also used intrapleurally and for the diagnosis of bronchopleural fistulae. For the diagnosis of bronchial lesions, however, lipiodol is preferred.—*Emploi de l'oxyde de thorium pour l'opacification des cavités pulmonaires, Ch. Gernez-Rieux, Garcenot & Morseau, Rev. de la tuberc., 1944, No. 1/3, 9: 9.—(G. Simmons)*

Fluorescent Microscopy.—To determine the value of this method as compared with the Ziehl-Neelsen stain many smears were made in duplicate of sputum, gastric contents, urine, pleural fluids, etc. One set was stained by immersion in a staining bath using a modified Ziehl-Neelsen technique and the other was stained with 0.1 per cent auramine for fluorescent examination. Specimens in the latter group were fixed to the slide with egg albumen, which in itself is faintly fluorescent. This characteristic, however, aided in focusing and thus eliminated the objectional feature of having to work with a totally black field when only an occasional bacillus was present. The fluorescent method gave definitely more positives than the Ziehl technique, especially with pleural fluids, which showed nearly twice as many positives by fluorescence as with the other method. The overall results, however, were closer. Of 2,918 specimens, 50.5 per cent were positive microscopically when stained according to Ziehl-Neelsen, whereas 60.6 per cent were positive on fluorescent examination. Some doubt was expressed as to the specificity of some of the fluorescent positives in view of the clinical and roentgenological findings. This inspired studies in which specimens from fluorescent-positive Ziehl-Neelsen-negative cases were inoculated into guinea pigs to test the true specificity of the fluorescent method. Over 100 animals were used representing 102 cases. At the end of eight weeks all animals were killed and the liver, spleen, lungs and site of inoculation were examined both grossly and microscopically. There were 9 tuberculous animals, or 8.4 per cent, 6 of which were inoculated with material from advanced cases and 3 from minimal cases. This is approximately the same percentage increase as would be obtained by animal inoculation of concentrated material which is negative by the conventional Ziehl-Neelsen method. Admitting the possibility of there being a certain number of false positives even with the Ziehl-Neelsen stain, these discrepancies are never of the magnitude as found in this study. The possible explanations of such a finding are: "over-diagnosis" of slides stained by the fluorescent technique, the occurrence of relatively avirulent or nonviable tubercle bacilli and the presence of saprophytic acid-fast bacilli, especially in gastric washings. Except for the "over-diagnosis" with the fluorescent method, these same factors would apparently influence the findings with the standard stain. The authors, nevertheless, conclude that "over-diagnosis" (a term which they do not exactly define) and the relative frequency of saprophytic acid-fast bacilli in gastric contents are the most important factors for the explanation

of the lack of correlation between the sensitivity and specificity of the method. The fluorescent method, as employed, fails to correspond with the clinical, roentgenological and pathological status of the tuberculous patient too often to warrant its routine use.—*Demonstration of Tubercle Bacilli by Fluorescence Microscopy, R. J. Ritterhoff & M. G. Bowman, Am. J. Clin. Path., Technical Section, May, 1945, 9: 39.—(J. S. Woolley)*

Fluorescent Microscopy.—Fifteen hundred and three sputa were examined. Each sputum was divided between two slides; one was stained with auramine, and examined under the fluorescence microscope; the other was stained first according to Ziehl-Neelsen, then according to Hallberg. The latter method, worked out in 1939, is considered an improvement over the Ziehl-Neelsen method. Instead of carbol fuchsin, "night-blue" in carbolic acid is used, and then diluted carbol fuchsin or neutral red is applied. In all cases where no bacilli according to Ziehl-Neelsen were found, cultures were made on Löwenstein medium. Photographs of the same fields of certain slides were made which had been stained subsequently by all three methods. Fluorescence microscopy was found superior to both the other methods of staining and staining according to Hallberg gives better results than Ziehl-Neelsen. The photographic studies showed that more bacilli are stained with auramine than with the other methods. The Hallberg method is superior to Ziehl-Neelsen because the contrast conditions are better. Cultures were found superior to all the staining methods.—*On Establishing the Presence of Tuberculosis Bacilli by Means of the Fluorescence Microscope, Anna Andersson, Act. med. Scandinav., November 20, 1943, 115: 441.—(G. C. Leiner)*

Inhibiting Action of Gastric Juice on Tubercle Bacilli.—Several investigators have noted the presence of some substance in the saliva which inhibits or interferes with the growth of tubercle bacilli. Since it is almost impossible to prevent the contamination of gastric contents with saliva this inhibitory substance might act upon tubercle bacilli in such gastric contents if, for instance, the specimen is kept over night or longer, as when three-day specimens are pooled for study. The presence of some such antibacillary substance would explain the discrepancies between culture and guinea pig as reported by one observer. Other workers have found that exposure to artificial gastric juice *per se* resulted in definite inhibition or attenuation of tubercle bacilli as evidenced by the guinea pig results. One might conclude that the gastric juice alone has its own injurious effect upon tubercle bacilli. Several observers have found that gastric acidity was not usually high enough to be a serious inhibitory factor. On the other hand some writers have stated that there are no harmful substances present in gastric juice and that tubercle bacilli may be safely left in contact with gastric contents for hours or days. Working with natural gastric contents the laboratory at the Glen Lake Sanatorium has been able to show that tubercle bacilli are inhibited both in their ability to grow on culture and to infect guinea pigs in many specimens, depending largely on how fresh the specimens were. For example, a single gastric lavage was received and divided into three portions. The first portion was treated and cultured immediately. The second portion was placed in the 37°C. incubator over night and on the next day treated and cultured. The third portion was placed in the icebox for two days before being inoculated into a guinea pig. The results were as follows: (*1*) A heavy positive culture in about three weeks. (*2*) Never any growth. (*3*) No demonstrable lesions when the pig was autopsied at six weeks. Bacilli from *1* readily infected another pig, thus proving the virulence and identity of the strain. An investigation o more gastric specimens similarly treated frequently gave like results. The disagreement between culture and guinea pig, where the inoculation was delayed, was so noticeable that a new series of gastric specimens were studied in which the entire content of the lavage was treated immediately upon receipt.

A portion of the treated sediment was cultured at once and the remaining sediment placed in the icebox as before to await inoculation. In this series there was a somewhat closer agreement between guinea pig and culture. Seven gastric specimens were more carefully studied. Each specimen was divided into six portions. The first portion was treated and cultured at once, the second portion after twenty-four hours in the incubator and the third portion after twenty-four hours in the icebox. The remaining portions were each seeded with 0.01 mg. of tubercle bacilli per cc. and then treated as above. In 5 out of these 7 specimens the tubercle bacilli either present or added did not grow from the portion kept in the incubator. Various degrees of inhibition were shown with the iced portion. It is evident that holding an untreated specimen at either icebox or incubator temperature is apt to convert a positive gastric lavage into a false negative one. The inhibitory action varies from one specimen to another, but strongly active gastric contents may inhibit the growth of all the tubercle bacilli therein. Contrariwise, weakly active gastric contents, or inactive gastric contents may only partially inhibit growth or may not affect it at all. Hence, any long series will contain inactive or weakly active specimens which will give a few positive cultures regardless of the methods used to hold or store such inactive specimens. These occasionally positive cultures tend to assure the workers that all is well with their technique. The nature of the inhibitive substances or combination of substances has not yet been determined. The conclusion is that it would seem wise to treat all gastric contents for culture or animal inoculation as soon as they are received for the substances concerned in the inhibition require time. It is also apparent that higher temperatures speed the reaction. Furthermore, no time should be lost between treatment and the inoculation of media or animals. The practice of accumulating several specimens over a period of days and pooling the same should be discouraged.—*Inhibitive Effect of Gastric Lavage on Tubercle Bacilli: A Preliminary Report, V. M. Schwarting, Am. J. Clin. Path., June, 1945, 15: 234.*—(*J. S. Woolley*)

Pulmonary Lavage.—The authors have systematically replaced gastric lavage by pulmonary lavage. Two cc. of a 2 per cent pantocain solution and 20 cc. of a normal saline are installed supraglottically. After introduction of a cough reflex the expectorated liquid is examined microscopically and by culture. The results of 70 cases are presented. All patients had had negative sputa and gastric contents for at least ten months. Sixty-six were negative on pulmonary lavage and 4 positive (5 per cent of total). These comprised 2 cases with partial pneumothorax, one with an infiltrative lesion treated with rest only and one a productive bilateral lesion. Pulmonary lavage was well tolerated by all patients. No untoward effects, no fever nor hemoptysis was encountered. Ninety per cent had slight rhonchi and sibilant or crepitant râles in the bases which persisted for about three hours. The only contraindications are a decompensated heart and acute attacks of asthma. It is the authors' impression that pulmonary lavage should be substituted for gastric lavage for its easy technique as well as its better results.—*Investigacion del bacilo de Koch en el lavado del arbol respiratorio, A. P. Heudtlass, J. A. Marti & A. Adamo, Prensa méd. argent., July 13, 1945, 32: 1327.*—(*W. Swienty*)

Pulmonary Lavage.—The available methods to detect tubercle bacilli in sputum and gastric specimens are not entirely satisfactory. The detection of tubercle bacilli is particularly important in the evaluation of pulmonary shadows discovered in mass surveys. A new method has been worked out, consisting in the puncture of the trachea at the level of the crico-thyroid membrane, followed by the introduction of an anesthetic and of physiological salt solution. By assuming the Trendelenburg position, the fluid is uniformly distributed in the various segments of the lung; finally the patient is made to expectorate the injected fluid which is collected and examined on con-

centrate and culture. The author has not yet employed this method on a large scale; the preliminary results, however, seem to justify further studies. The procedure is simple and is well tolerated by the patients.—*Lavado pulmonar en el diagnostico etio-patogenetico o evolutivo de la tuberculosis, M. de Abreu, Hoja tisiol., March, 1945, 5: 83.*—(*L. Molnar*)

Acid-fast Saprophytes.—Acid-fast saprophytes occur without as well as within the human body, and they may occur in healthy as well as in sick persons. The differential diagnosis from true tubercle bacilli is very important, especially so since acid-fast saprophytes are found more commonly than is generally believed. In the author's series of 1,654 cultures, he found 10 acid-fast saprophytes which were nonpathogenic for guinea pigs, a percentage of 0.6. The percentage is similar to a much larger series by Lester who found 130 nonpathogenic acid-fast bacilli in 26,343 cultures, or 0.5 per cent. The importance of recognizing saprophytes for what they are is quite obvious. Saprophytes should be suspected if cultures are not entirely typical of tubercle bacilli, especially if the colonies are of tough consistency, and of variable colors, such has yellow-brown, yellow-red or brick-red. Also, if acid-fast cocci, or non-acid-fast rods and cocci are found in the same culture tubes, saprophytes may be suspected. Clinically, the results of cultures should be doubted if the X-ray picture, although it may be characteristic of tuberculosis, appears to be at variance with the demonstration of tubercle bacilli. Especially in cases of bronchiectasis which are otherwise typical the presence of acid-fast bacilli should not be construed to mean tuberculosis unless the bacilli are pathogenic for guinea pigs. The author has 2 cases in which the diagnosis was saccular bronchiectasis. One of these had been treated for pulmonary tuberculosis in a sanatorium. The author's 10 cases all had tuberculosis as demonstrated by X-ray and clinical picture. Three cases had active tuberculosis, 5 had probably healed tuberculosis and 2 had healed tuberculosis.—*Säurefeste Saprophyten, eine wichtige Fehlerquelle bei der Tuberkulosediagnostik, E. Hedvall, Acta med. Scandinav., 1945, 121: 71.*—(*H. Marcus*)

Hematology in Tuberculosis.—To correlate the value of hematological studies in tuberculosis with controlled experimental infections, the authors have studied four groups of guinea pigs under strictly controlled conditions. Three groups of animals had been inoculated with BCG vaccine. One group was inoculated by the multiple puncture method of Rosenthal, another by Weill-Halle's scarification method and the third by Wallgren's intracutaneous route. The fourth group remained as controls. After a determination of a base-line for all hematological values, all animals were infected with virulent human tubercle bacilli by the intraperitoneal route. Biweekly complete blood counts were done on all animals until death, or until the 103rd to 110th days, when the survivors were killed. Clinically and at autopsy the fact was again substantiated that BCG vaccination in guinea pigs is of definite value in limiting the infection and prolonging the life of the animal. Rosenthal's multiple puncture method seemed to be most efficient in this respect. The investigation of the white blood cells showed that the total white count, the differential monocyte count, the lymphocyte-monocyte ratio and the leucocytic index are of definite value as an aid in the prognosis of tuberculosis. In every case the hematological findings coincided with the clinical and autoptic observations. Briefly, the results may be summarized by stating that the higher the total white cell count, the higher the monocyte count, and the higher the monocyte lymphocyte ratio, the more unfavorable the prognosis. The variables are all combined in the leucocytic index, first proposed by Crawford and Medlar in 1935. It equals the value of the neutrophil-lymphocyte ratio plus the value of the elevation of the monocytes plus the value of the abnormal total white cells. The higher the index the worse the prognosis.—*Hematological Studies in Tuberculosis, K. Birkhaug & H. Schjelderup, Acta med. Scandinav., 1945, 121: 1.*—(*H. Marcus*).

Bronchospirometry Studies in Collapse Therapy.—In 13 patients with pulmonary tuberculosis, functional examination of the lungs was made before and after institution of pneumothorax. The second examination was made after four to six insufflations to avoid any influence on the results of a favorable or unfavorable development of the pulmonary lesions. The results so obtained are true expressions of the action of the pneumothorax. In each examination vital capacity, complemental air, supplemental air, respiratory volume, oxygen consumption and the equivalent of ventilation were determined. A comparative study was made of the relative values of these findings in both hemithoraces. An analysis of the observations shows that in the collapsed lung the bronchospirometric values diminish constantly. The reduction of the vital capacity is more accentuated than that of the respiratory volume. The decrease of the vital capacity is mostly due to the reduction of reserve air but also to the diminished complemental air. The average of this reduction was 15.2 per cent for the vital capacity; 12.4 per cent for the complemental air; 19.8 per cent for the supplemental air; 12.1 per cent for the respiratory volume. These reductions are more accentuated in pneumothorax with atelectatic lung. In certain cases the pulmonary ventilation diminishes so much that no graphic registration of the existence of supplemental and complemental air can be obtained. The oxygen consumption also shows appreciable reduction. It was most marked in partial atelectatic collapse because the pulmonary circulation is absent in atelectasis. The average for all cases was 11.6 per cent. Pinner, Leiner and Zavod have shown that collapse therapy influences more the oxygen consumption than the pulmonary ventilation. In the authors' study the reduction of the oxygen consumption was scarcely inferior to the reduction of the respiratory volume. The equivalent of ventilation improved with the institution of pneumothorax in 9 cases out of 12. It improved in the contralateral lung in 5 cases, was stationary in one and became less favorable in 5 cases. The improvement or retrogression of the equivalent of ventilation in the pneumothorax lung depends upon the existence of a selective or contraselective collapse and the complete exclusion of dead space. The authors believe that the anatomical and functional conditions of the diseased lung require of the healthy lung a better respiratory work with a low (more favorable) equivalent of ventilation. After compensatory action is no more required and function of the diseased lung has been favorably modified, the equivalent of ventilation may become higher. In collapse therapy, the vicarious function of the contralateral lung is evident. The respiratory volume was elevated in the contralateral lung in 11 cases and kept the same value in the remaining 2. The oxygen consumption was also increased in the contralateral lung in 11 cases, stayed the same in one and diminished in one case.—*Estudios broncoespirometricos en la colapsoterapia, R. F. Vaccarezza & A. Soubrié, An. Cáted. de pat. y clin. tuberc., June, 1944, 5: 5.*—(*W. Swienty*)

Pulmonary Elasticity.—Pulmonary elasticity in living man was studied on 16 patients suffering from different diseases. The method of Christie and McIntosh was used. The results obtained are presented in two tables. Table 1 shows the results on 7 patients suffering from pulmonary tuberculosis and one patient with spontaneous pneumothorax, all showing normal figures. Two patients with nonrespiratory diseases showed a quotient of pulmonary elasticity of 2 and 4 (normal 3.4 to 7.6). In table 2 the results obtained on patients with other pulmonary diseases are given. These are in accordance with those obtained by Christie and McIntosh. The procedure to determine pulmonary elasticity is simple and may help the clinician and the radiologist to depict the existence of true emphysema in borderline cases. When, in cases of emphysema, the figures are normal, this means that this is entirely functional and not anatomical and therefore reversible.—*La elasticidad pulmonar in clinica, M. R. Castex, E. S. Mazzei & G. Caputo, Arq. Inst. brasil. para investigacao da tuberc., 1941–42, 5: 17.*—(*P. B. Franca*)

"Perfect" Pneumothorax.—A perfect artificial pneumothorax performs two duties. It relaxes tension in the neighborhood of the diseased lung area allowing the diseased tissue to assume the optimum position for healing. It also immobilizes the diseased area. To insure a perfect pneumothorax, the diseased as well as the healthy lobe must be free of adhesions. If the healthy lobe is adherent, it cannot assume the function of the diseased lobe, even though the latter might be selectively collapsed. Observation of the respiratory cycle fluoroscopically shows that the selectively collapsed diseased lobe is immobilized only if the healthy lobe is free to expand over and above its natural limits and thus assume part of the function of the diseased lobe. When the entire lung is affected and no selective collapse can be expected, improvement in the patient's condition must be attributed to a selective collapse of disseminated diseased areas within the lung. The scattered lesions can take up the "slack" and internal selective relaxation and immobilization can be achieved to the degree that the diminished lung volume affords. Conversely, adhesions of the diseased areas, a "contraselective" collapse, may give the impression that the patient is not benefited by the pneumothorax. This is not entirely true, however, because the diseased lung is immobilized if the healthy lung is free of adhesions and able to take over the function of the sick lung. Relaxation is, of course, impossible under these circumstances. If the contralateral lung is free from disease, a mobile mediastinum is to be regarded as an asset because the healthy lung can then take on some of the function of the collapsed lung. By the same reasoning patients derive more benefit from pneumothorax therapy by lying on the healthy rather than on the pneumothorax side.—*The "Perfect AP", G. Day, Lancet, September 8, 1945, 249: 300.*—(*H. Marcus*)

Reinduced Pneumothorax.—The reinstitution of a pneumothorax prematurely abandoned was attempted in 10 cases. In 7 of them the pneumothorax could be reëstablished despite the fact that it had been abandoned for periods varying from three to nine months. It appears that pleural adhesions following abandonment of a pneumothorax occur less frequently than is commonly assumed.—*Le potentiél de redécollement des plèvres après cessation des insufflations de pneumothorax pendant plusieurs mois, J. Chabaud, Rev. de la tuberc., 1941, No. 5/6, 6: 366.*—(*G. Simmons*)

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The Trudeau School of Tuberculosis announces its Thirty-second Session to open at Saranac Lake, New York September 9, 1946

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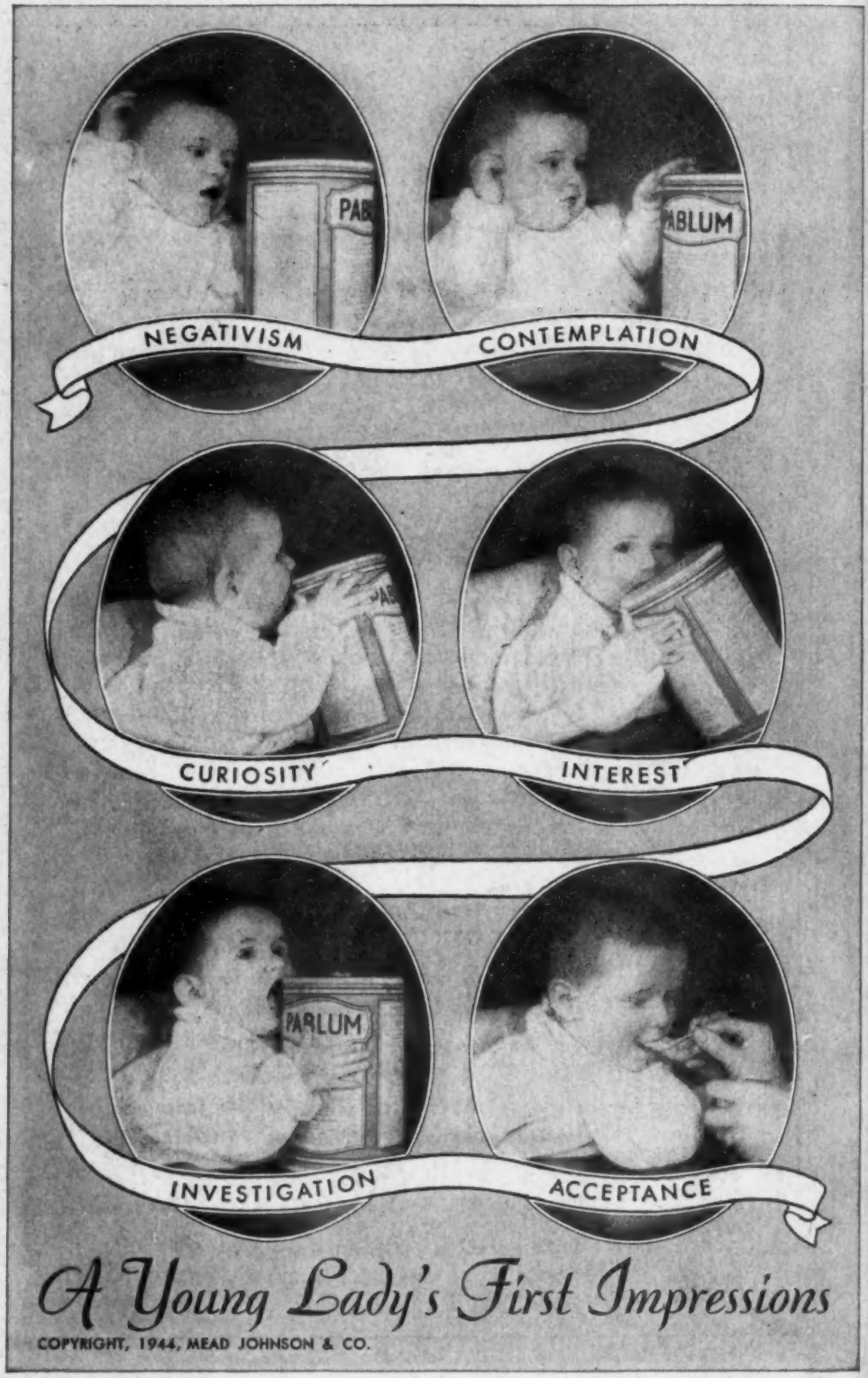

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